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EDITORIAL

Coleridge has said that "poetry is the best words in the best order". There is no reason why a doctor should be able to write poetry, though many have done so, and it is an accomplishment not to be despised. However, a doctor should be able to put "the best words in the best order" when occasion demands. No matter how valuable a doctor's ideas and experiences may be, they are unlikely to attain prominence unless he is able to express himself lucidly, in print. The ability to translate his ideas into clear and understandable English is one of the essentials of a medical man's equipment. Like so many other essentials, this one can be attained only by hard work. There is no royal road to success in writing.

There are two lines of endeavour which will contribute to the development of the ability to write well. These are reading and writing. Throughout his whole course, the undergraduate reads scientific literature of one sort or another. Some of this is well written and some is not. By examining the books that he considers well written and noting the author's style,

choice of words, type of sentence, method of arrangement of material, and so on, the student will soon form some opinion concerning the scientific style which suits him best. Reading good books of a non-scientific type may contribute even more to the appreciation of the possibilities of our language. Scientific writing demands a clear, concise and lucid style, but the usefulness of this type of prose is by no means confined to scientific subjects. Some of the finest examples of a clear, yet powerful, prose style which have been produced in recent years are to be found in the works of Winston Churchill. His books deserve careful study by anyone who wishes to write with clarity and force.

The reading of good literature will bring appreciation of the skill of the expert, and condemnation of the slovenly expression of the careless author, but it will not enable the reader himself to write well. Admiration alone does not make emulation possible. The studied simplicity which pervades the work of the best scientific writers is very misleading. Only those who have tried to write can appreciate the difficulty of attaining this simplicity.

When reading has led to some appreciation of the technique of writing, and ideas are demanding expression, it is time to start writing. The first efforts will be halting and laborious. The style will probably be too stilted or too involved; only practice can perfect it. The chief purpose of this Journal is to publish this early work and thus encourage the author to further endeavour so that he may ultimately attain that exactitude of expression which is so desirable in all scientific writing. This golden opportunity presented by the Journal is overlooked by many students. The few who take advantage of it are well rewarded for the time they spend in writing. We hope that every reader of the Journal finds in it something which is of value to him, but we feel that only those students who contribute to it make full use of the opportunities which the Journal affords.

THE MEDICAL TREATMEMT OF DISEASES OF THE NOSE, THROAT AND EAR

PERRY G. GOLDSMITH C.B.E., M.D.C.M., F.R.C.S. (CAN.),
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PART II.

Nasal Neurosis.

Purves-Stewart (British Medical Journal, Nov. 29th, 1924), defines this condition as follows: "A neurosis may be defined as molecular abnormality of the nervous system (whether cerebro-spinal or vegetative, or both together characterized clinically by abnormal reaction to ordinary stimuli. These stimuli may be physical or emotional; they may arise outside or from within the patients body. The abnormality of reaction may consist in excessive response, in diminished or absent response, or in some unusual or strange response. We must recognize that the neuroses are real diseases with positive clinical phenomena, as real as cancer or small-pox."

Underlying this connection we have a disturbance of the somatic sensory and autonomic nerve supply. This subject is an enticing one and much too important to rush through. Neil Maclay of Newcastle-on-Tyne, in the British Medical Journal of November 29th, 1924, has a very illuminating study of this subject.

Experimental data seems to indicate the fact that the nose can be influenced by blood-borne agents, and intranasal conditions be established which in all respects resemble what is commonly known as catarrh. Moreover, I think it may be assumed that a variety of blood-borne agents may bring about those phenomena, as well as animal emanations and the pollens of flowers and grasses.

It is generally conceded that gastro-intestinal disturbance, and notably the torpid colon, may lead to the development of nose symptoms of a catarrhal nature. Observations suggest that there is a definite connection between auto-infection from the bowel and those nasal symptoms which may be classified as autonomic sensory and the results obtained by the experimental use of guanidine lend some support to this view. It seems reasonable to suggest that such systemic blood contamination may be an important causative factor in the catarrhal condition of the naso-pharynx in early life. It would even seem possible that this disturbance of the mucous membrane might lead to the hypertrophy of the lymphoid tissue which composes Waldeyer's lymphatic ring, and which in its wet and bulky state becomes infected with bacteria, the action of which is likely to aggravate or perpetuate the catarrhal state. In a paper I read before the British Medical Society at Winnipeg, 1930, I spoke on allergy as follows:

As many of our patients with oedematous manifestations of their sinus mucosa have as an underlying factor an allergic state, failure to overcome the hypersensitiveness leads to a persistence of secretion even though a new mucosal lining forms and is well aerated, because this new tissue still reacts to the same irritant. A family history of allergic manifestations, the presence of positive skin tests, and excessive eosinophiles in the nasal secretion and the blood suggest a consideration of allergy as the underlying cause of the oedematous mucosa. Such mucosal reactions do not necessarily come under the classification of infective processes but the soil is such that acute or chronic infection readily occurs and persists with purulent discharge added

to the mucoid material already present. Hansel goes so far as to say that "many of the chronic empyemas undoubtedly follow in the wake of an allergic process in which an oedema of the mucosa has occurred. In the non-suppurative hyperplastic or catarrhal group of paranasal sinus disease, clinical and histopathological studies have proven that in the great majority of cases the process is primarily an allergic disease. Therefore, all hyperplastic, non-suppurative sinus diseases should be considered as of allergic origin until proven otherwise.

Vaccines: I am not in the habit of using vaccines for the various inflammatory conditions in the upper air tract. Many practitioners do so, but there is no agreement as to the value of this therapy.

So far I have dealt almost entirely with nasal conditions, but the underlying principles are the same for the pharynx and larynx. I will only briefly refer to some of the common pathological changes and tell you in a few words what my therapeutic armamentarium contains.

Adenoids, when producing persistent disabilities such as defective nasal drainage, obstruction in breathing, aural inflammation or possibly septic process, are treated quite properly by surgical measures. Young children, however, may have occasional attacks of adenoiditis in which surgery is not advisable, correction of dietetic errors, lessening the amount of coddling may alone suffice. A small amount of Neo Silvol, say, 5 to 10%, instilled into the nose, or the use of iodine in oil may remove the symptoms present, and the little lymphoid tissue present may be left to carry out whatever physiological functions nature intended it should. Syrup of iodide of iron internally is also of use. If menthol is used the strength should not be more than a grain to an ounce, as it is very irritating to the young and old.

In adults, owing probably to repeated inflammatory states or to the dietetic and faulty habit errors so largely associated with chronic pharyngitis, irregular fibrosis may take place and we have what is known broadly as chronic naso-pharyngitis. Correction of the general systemic faults is the *sine qua non* of treatment. Toxemia with diabetes, chronic kidney, liver and intestinal origin must be always in mind in adults. Locally, however, in the acute exacerbations of the condition salts of silver (argyrol protargol, etc.), or mild solution of zinc chlor, seem to act very well. Post nasal applications vigorously applied usually clear up the condition. In the chronic state when the mucosa is soggy, massage of the vault with a gauze-covered finger gives marked relief. I am in the habit of giving my patients a post-nasal applicator and with a hand mirror show them how they can paint their own naso-pharynx. Tannic acid grs. 40 to the ounce of Glycerine is the usual pigment employed. Self-painting has the added advantage of lessening the hyper-sensitiveness of the pharynx so often present so that the presence of mucus does not excite the same amount of discomfort. When there is a cleft in the naso-pharynx, probably in the centre of a pre-existing adenoid mass, spoken of as the remains of pouch of Rathke, if a crust or oyster shell secretion forms, I am sorry to say I offer no therapeutic remedy of much use. Cleansing the nose with alkaline lotion or giving the patient a post-nasal tip with many perforations to attach to a syringe or douche lessens the discomfort. It must not be forgotten that seepage from the posterior nasal air cell may be responsible for the mucopurulent film covering the vault. Post-nasal secretion is most common from the antrum. The antral secretion on irrigation does not show up unless a black basin is used, and frequently only be visualized by allowing the solution to stand.

The use of iodine as in Mandel's pigment is very general in use as a post-nasal application. When the

membrane is atrophic in type it will increase secretion and lessen the discomfort but surely it is not rational to use it in a hypersecreting mucosa. Unnecessary zeal in clearing the nasopharynx of its adenoid tissue will in after years lead to a dry, glazed membrane.

The remainder of the pharynx may be described as a sac suspended from the base of the cranium having an opening in front and below. Its walls are composed of muscle and fibrous tissue, and interspersed in its envelope are various groups of lymph nodules, while covering its external surface is mucous membrane. Various areas may bear the brunt of inflammatory reaction, then we may have inflammation of the mucous membrane of the muscles, lymphoid tissues or fibrous tissue. In general systemic treatment is the same as for similar conditions elsewhere, such as the use of heat, rest and such drugs as sodium salicylate, guaiacol, aspirin, and etc. Locally, however, we may do much more, for example when the faucial tonsils are actually inflamed, I am in the habit of using in the *early* stages a strong solution of silver nitrate 100 grs. to the ounce. The gland is dried with cotton wool and the surface is turned white. This relieves the pain and if used very early materially lessens the severity of the attack. Probing the crypts or cupping the tonsil too may be of service. Hot saline irrigations are comforting to all inflammatory pharyngeal conditions. Gargling is usually imperfectly performed and spraying is of little avail. Painting the throat with iron and glycerine is an old standby, but I have never used it. Many of those conditions of acute inflammation are rapidly succeeded by general bodily infection and it is to this aspect of the case that careful oversight should be given. For example, an acute tonsillitis in the young may and often does cause carditis, only to be suspected by persistent increase of the pulse and it is a good rule to follow to keep patients in bed until the pulse rate remains within normal limits. Acute pharyngeal inflammation may indicate some specific infection such as syphilis, the exanthemata, or diphtheria. Vincent's Angina too should be kept in mind, and when ulceration occurrs, difficulties will at times arise to exclude syphilis. The Vincent ulcer responds best, I think, to the use of 5 to 10% sulphate of copper.

Agranulocytic angina. A toxic patient with sore throat, fever, chills, bleeding, sloughing, ulceration in the mouth, and with a fetid odour to the breath may be mistaken for one suffering from septicaemia, but if examination of the blood shows polymorphoneuclear neutrophiles to be almost completely wiped out, the case is likely to be agranulocytic angina. Sympathetic treatment directed in the main to keep the patient comfortable, and lessen the local reaction is all one can do as the disease is rapidly fatal.

Infectious mononucleosis is a self-limited disease of young adults, usually males, characterized by an acute onset with fever, malaise, sore throat, and glandular enlargement which usually begins in the neck. The tonsils are often inflamed and may be ulcerated. There is some increase in the white blood count, but the greatest change is in the percentage of lymphocytes which is very high. This confuses the condition with lymphatic leukemia, but the acute onset with fever, sore throat, and relatively low white blood cell count makes the diagnosis. In a few weeks the patient is back to normal and all anxiety is relieved. Biopsy is likely to be very misleading as the picture is one of lympho-sarcoma.

Acute streptococcic angina is sometimes spoken of as erysipelas of the throat, and causes grave anxiety lest the air-way be impeded by severe oedema at the entrance of the larynx. Rapid involvement of the deep tissues in the neck adds gravity to the outlook —one must remember that in these cases, death ensues from cardiac failure, or septic clot in the internal

jugular vein, hence the importance of heart stimulants at the proper time, and the intelligent use of surgery. Digitalis is of great value but its effect does not come into use before 12 to 18 hours. The use of poultices seems to be dying out, but I am old-fashioned enough to see much virtue in the linseed poultice.

Most chronic inflammatory changes in the pharyngeal mucosa depend on dietetic and bowel errors. Local pigments are used much too often. Alcohol and tobacco are not reduced or interdicted often enough. Relief of the worry and fear many of these patients have, will oftentimes allow of their disregarding most of the little discomforts they have. A remedy I often use in chronic pharyngeal discomfort is: Ulmi Fulvae (Slippery Elm), dispensed with a small amount of acid carbolic or menthol, this gives considerable comfort. Menthol in liquorice too is useful. Solutions of alum and zinc chloride and Krameria, might be more often used with advantage A spare simple diet with regular use of Blue pill and salts is better than local treatment. Pale anaemic girls with small lymphoid nodules on the posterior wall of the pharynx, require iron and not local applications.

Chronic tonsil inflammation which one must remember may be the seat of a very general pharyngeal discomfort, responds only in my experience to surgical measures. Sir James Grant speaks highly of the use of a Tonsil paint composed of the following:

> Iodine—5 grs.; Acetic ether (acid free)—2 fluid drachms; add Glycerine up to 1 oz.

This preparation to be well shaken and brushed into the Tonsils.

I do not use the X-ray in tonsil hyperplasia or inflammation though the size may be rapidly reduced by its use. Hyperplasia of the tonsil may respond to dental and mouth hygiene. Russell, of St. Bartholomew's Hospital, stresses the importance of clearing up the sinus infection before condemning the tonsil to surgery. Seal, of New York, has recorded a most impressive series of cases following the use of implantation of radium seeds.

Massage to the front and side of the neck is not nearly as often used as it should be. It is of special value in myosites of the sterno mastoid and fibrosites of the pharyngeal aponeurosis. Additional comfort may be gained by the use of the following liniment:—

> 01. Sinapis—10 min.; Menthol—10 grs.; 0.1. Gaultheria—1 oz. Sig. 10 drops to be rubbed into the part two or three times daily.

The Larynx: The larynx is a cartilaginous box containing many delicate muscles, small joints, some fibrous tissues, and in the saccule, a considerable glandular secreting area. The lining mucosa is delicate and only in a certain area like the arytenoid covering is there much likelihood of some serous distention. Serious diseases may originate in its own tissues, descend from the pharynx above, the oesophogus behind, the thyroid in front, or from the lungs below. Generally speaking the chief symptom is hoarseness.

Acute laryngitis does not permit of topical applications, for trauma is not an aid. We are left then with simple measures as inhalations of medicated steam, hot or cold applications to the neck, measures to check excessive cough, and assist the liquefying of the bowels, kidneys and skin, with vocal rest, are obviously of value. When the joints are involved the latter is particularly to be enjoined, and if Rheumatism is suspected, the use of Salicylate and a general Rheumatic regime is necessary. Acute nephritis may be the cause of an acute laryngitis. Chronic laryngitis may require topical treatment, local applications of zinc chloride or some silver salt; tubercular disease, vocal rest or the cautery point, but this should not be used in patients who are progressively going down-

wards. Chronic laryngitis may be due also to vocation as hawkers and singing teachers. Faulty voice production requires correction and this also includes misuse, such as excessive or violent use, or under poor atmospheric conditions. Excessive mucous secretion may be caused by over-action of the mucous glands in the saccule or dry crustings may lead one to see its association with a chronic sinusitis or atrophic rhinitis. The use of a self-injector for application of various oily solutions to the laryngeal mucosa is a very efficient form of treatment. Acute and chronic laryngitis, when accompanied by tracheal involvement with intractable cough respond very often marvelously well to intratracheal injections of a 2% solution of menthol in oil.

Hoarseness due to paralysis is treated solely on medical lines, reference might be made to central lesions due to specific disease or what is termed arteriosclerosis, tabes, aneurism, apical pleurisy, cardiac and excessive venous distentions from such condition as cirrhosis of the liver. Peripheral neuritis, due to influenza or toxins of diphtheria, is not infrequent. Hence the use of strychnina, electricity and massage may be helpful. Local hyperplasia of mucosa may require a cauterizing agent. Radium or X-ray may be used in multiple papillomata and pacciderma sometimes respond to salicylic acid in alcohol. Persistent hoarseness in a patient over thirty demands the exclusion of cancer of the Larynx.

The Oesophagus: Very little in the way of medical treatment is used in this portion of the digestive tract. It lends itself more to care by surgical measures, at any rate, whatever local treatment may be desirable must be associated with a formidable surgical procedure.

In the management of chronic ailments, one is always impressed with the knowledge that a functional element frequently becomes the dominating feature of the complaint. We must be careful not to initiate or help keep up this condition. One of the greatest weapons we possess in the treatment of diseases is our ability to increase the faith, hope and pluck of our patients. Simply assuring our patient that he has no cancer, tuberculosis, or any serious disease is often quite all that is necessary to quiet his fears and worries and his little discomforts are not magnified into serious diseases.

Increase in our reading of general medicine and the acquisition of greater knowledge of the underlying process of disordered metabolism will strengthen our specialty in its aim to be an art and a great aid in the treatment of disease.

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THE SYMPTOM OF COUGH

TREVOR OWEN, M.B., M.R.C.P., LOND., F.R.C.P. (C.)
Toronto General Hospital.

The interpretation of symptoms is the foundation of clinical medicine; and the interpretation of signs is a further step in the building of a diagnosis.

By the analysis of symptoms we attempt to deduce the tissue, or system of tissue, affected, and the exact site of the lesion in that tissue. From the qualities of each symptom its changeability, duration, its accompaniments and their relationship, we attempt to decide whether the lesion is inflammatory, degenerative or tumor mass. It is of immense importance, to prevent loose thinking, that we ascertain the facts, that we prove those facts to be true, and that we collect **all** the facts. We may then possibly name or classify the disease.

The accuracy of a diagnosis does not end with the naming of it, but includes the understanding of the histological and physiological changes occurring in the tissue from which each symptom and sign arises. Only by the persistent repetition of this mental practice can we accomplish the refinements in diagnosis essential to the application of refinements in treatment.

Cough is an example of a common symptom which has to be analyzed. What is a cough for? Why are we equipped with such a sensitive and violent reflex? I believe it has only one function. It is a complex reflex elaborated for the protection of the individual's life. No wonder it is violent and easily aroused. Constant pulmonary ventilation is vital. Even a temporary or partial interruption leads to violent efforts on the part of the organism to overcome it. The cough reflex is a protective mechanism whose only legitimate purpose is the expulsion of foreign bodies in the passages which endanger this vital ventilation. One includes in this term pus from a lung abscess and bronchiectatic cavities as well as extraneous foreign bodies. In all other circumstances, therefore, the cough reflex should be suppressed and a search made for its cause. There are a large number of points at which a stimulus applied will produce the cough reflex. They are: the ear, including the external auditory canal, the Eustachian tube, the pharynx, the tonsils, adenoids, the accessory sinuses, the larynx, the trachea, bronchi, bronchioles and pleura—but **not** the lung substance.

To a certain extent one may get a lead as to the site of the stimulus by paying great attention to various qualities of the cough—that is, its relation to what the patient does and its tone and accessory tones. One includes in this the effect of posture on the cough; where gravity will play a role in altering the flow of irritating fluids, the time of day or night cough occurs, the effect of taking food or drink, if there is any sputum and its nature. The tone of the cough, which is high or low-pitched or musical, whether there are paroxysms, spells of coughing or merely an occasional single cough.

It is most important to keep in mind that the symptom of chronic cough is practically never synonymous with the disease chronic bronchitis, because the latter is very rare. The **pharyngeal** cough is **the** common cough. This region supplies the basic diapason tone of the cough. It is a noisy open barking cough—hard, unsatisfactory—coming often in spells. It is frequent at night and is relieved by eating or drinking as the pharynx is then washed by less-irritating material. The commonest example of this cough is the

cigarette cough and the next most frequent cause is a post-nasal discharge coming from the ethmoid sinuses turbinates or infected adenoid tissue. If uncorrected a chronic pharyngitis becomes established and spreads to the trachea.

The **sinus** cough—that occurring in a maxillary sinusitis, is a muffled, closed, irrepressible paroxysmal cough. It is often associated with what might be called the "antral voice", that aegophonous nasal tone to the voice present when one of the large resonating chambers is filled with pus or hypertrophied mucous membrane.

Coughs arising in the **larynx** and below are often musical. Those in the larynx are harsh, ringing and accompanied by an alteration in the strength or quality of the voice. They are often brought on by swallowing and in specific instances may be accompanied by spasm as in croup and whooping cough. A laryngeal cough with pain sometimes means ulceration.

Tracheal coughs are the hard, sonorous coughs with a vibrant, deep note. These also may arise after swallowing and there may be soreness under the sternum. At the bifurcation of the trachea pressure from without, as in aortic aneurysm, gives rise to the brassy obstructive cough. The patient may complain of the sensation of the presence of a foreign body which he cannot expel beyond a certain point. Any superior mediastinal mass may also cause this cough.

In the **bronchi** the cough tone is accompanied by audible rhonchi. The lower down in the respiratory system a cough arises, the more musical the note, the more prolonged the note, and the higher pitched and more numerous are the rhonchi superimposed on the basic cough tone. In the bronchioles the cough is a long-sustained sound, accompanied by showers of high-pitched rhonchi or obvious moisture. Examples of this are the asthmatic wheezing cough and the cough of myocardial failure with pulmonary oedema—the suffocative cough.

The **pleuritic** cough is a dry, short, frequently soft, cough with very little effort in it.

The **ear or Eustachian tube** cough is very similar, short, occasional and light—an insincere, almost manneristic cough. Wax near the tympanum or a foreign body in the external auditory canal will frequently cause a most persistent, small cough—most irritating to everyone, especially if the cause is not found.

Psychic Coughs.

A cough may be an hysterical equivalent or a prominent symptom in a patient with catatonic dementia praecox. Certain egocentric individuals develop a manneristic cough as an expression of a sense of dignity, while others use it as a cloak to cover, to a certain extent, their embarrassment when cultivating the art of public speaking.

Cough occurring as a symptom in the course of an acute illness is usually an inflammatory lesion in one or more of the sites above mentioned and is not difficult of diagnosis except perhaps in the case of an acute sinusitis.

Chronic cough, however, a common complaint, and as mentioned above, is so loosely used as being synonymous with a chronic bronchitis which does not exist, that too little importance is attached to it and investigation ceases with a sedative prescription. The most common cause is a post-nasal discharge from adenoid tissue or a chronic sinusitis and if long continued may lead to a chronic tracheitis. The very act of repeated coughing merely adds physical trauma to an already chemically-irritated mucous membrane. The sedative drug may partially and temporarily remove one factor at least in the process. A chronic bronchitis does of course, occur locally in a pulmonary lesion such as tuberculosis, bronchiectasis, carcinoma and pressure from without.

By the kind of sputum and other

physical symptoms and signs we must diagnose the intrathoracic causes of cough. In bronchiectasis the nummular masses in muco-purulent sputum sometimes of foul odour—the possibility of blood streaks—the effect of posture on the amount of sputum—the clubbed fingers. In carcinoma the persistent occurrence of small amounts of dark, cherry-red blood—long-continued pleuritic pain—clubbed fingers. In tuberculosis acid-fast bacilli and the post-tussive rales and X-ray signs.

The **treatment** of the symptom of cough, apart from the diagnosis as to its cause and site of origin, is important because of the harm the coughing does in preventing not only local, but general rest. As pointed out before, its only legitimate use is to expel foreign material which might interfere with the ventilation of a part, or the whole, of the lung area. In other circumstances therefore it should be suppressed.

In acute conditions of naso-pharynx, larynx, trachea and bronchi there is no need to depart from the rational therapy of inflamed tissue anywhere —namely to provide rest and apply heat and moisture. Heat and moisture can be given by a kettle steaming by the bedside in a warm room and frequent hot drinks. Rest, by putting the patient to bed when the pulmonary ventilation will be least, and stopping the cough by sedatives such as codeine, grs. ¼ every three or four hours. In chronic conditions the same procedures are of value but luminal, grs. ¼, may be more useful than codeine, especially in naso-pharyngeal diseases.

To summarize then, what should be done in the investigation of a patient complaining of cough:

1. Take a meticulously careful history.
2. Look for clubbed fingers.
3. Examine, or have examined, the ears, sinuses, throat, larynx and lungs.
4. Be sure of seeing the sputum, and **always** examine it for tubercle bacilli.
5. X-ray the chest if all the above examinations are negative and sometimes when they are not.

WHAT EVERY WOMAN DOESN'T KNOW—HOW TO GIVE COD LIVER OIL.

Some authorities recommend that cod liver oil be given in the morning and at bed time so as to assure an appetite for the oil, while others prefer to give it after meals in order not to retard gastric secretions. If the mother will place the very young baby on her lap and hold the child's mouth open by gently pressing the cheeks together between her thumb and fingers while she administers the oil, all of it will be taken. The infant soon becomes accustomed to taking the oil without having its mouth held open. Mead's Newfoundland Cod Liver Oil, of minimum acidity and prepared from fresh healthy livers, is well tolerated by infants and children and is palatable without flavoring.

If given cold, cod liver oil has little taste, for the cold tends to paralyze momentarily the gustatory nerves. As any "taste" is largely a metallic one from the silver or silver-plated spoon (particularly if the plating is worn), a glass spoon has an advantage.

Mead's 10 D Cod Liver Oil is made from Mead's Newfoundland Cod Liver Oil. In cases of fat intolerance the former has an advantage since it can be given in 1/3 to ½ the usual cod liver oil dosage.

VARICOSE VEINS OF THE LOWER EXTREMITY*

F. O. R. GARNER, '34.

Varicose veins of the lower extremity are a common occurrence and are probably frequently encountered by the general practitioner. With the present effective and simple treatment, good results are obtained; consequently some knowledge of the subject will not be out of place.

The treatment has been completely changed recently. The old treatment was operation and results were not entirely satisfactory. The operations required four to six weeks' convalescence, and entailed much expense. Recurrence was present in about fifteen per cent. of cases. The mortality, from lung embolus, was about one per cent.

Now the condition may be cured without disturbing the patient's daily regime. A needle prick does the trick, there are no scars, only eight per cent. recur and the danger of emboli is practically nil.

History.

Chemical substances were first introduced into blood vessels to produce localized thrombosis by Pravoz in 1851 in his attempt to cure aneurysm by the injection of ferric chloride. For the next 70 years efforts were made to extend this method of treatment to other conditions, and to introduce various solutions; but for one reason or another several of the proposals were rejected by most members of the profession. It is now roughly six years since the treatment by injection has been generally accepted, to displace surgical methods. Nevertheless, it was recognized that an ideal sclerosing solution had not been obtained. Finally Wright and other English surgeons reported excellent results with sodium morrhuate.

Etiology and Pathology.

Strictly speaking, enlargements of veins may be divided into two groups; first, varices or partial dilatations, which may be saccular, barrel-shaped, or nodular; second, phlebectases, which may be cylindrical, spindle-shaped, serpentine or circoid. They vary in size from that of a small pea to that of a hen's egg. All this, however, is more of academical interest than practical.

There are great normal variations in vein thickness among people, and in the same person. The congenitally weak spots are the usual starting places of varices. A positive family history is obtained in over fifty per cent. of cases. It is generally agreed that mechanical factors alone cannot be held responsible for the production of varicose veins, and it is now felt that some systemic condition is the essential cause. Many such conditions have been suggested—notably certain toxemias, some endocrine disturbances, inflammatory causes, debility following illness, in support of which one sees certain frequencies of varicose veins being noticed during convalescence from some infectious disease.

However, the most likely systemic cause would seem to be some internal secretion deficiency, and this would account very well for the undoubted hereditary element. At such times as puberty and the menopause, when the endocrine balance is upset, varicosities tend to appear with a notable frequency. Again, during pregnancy it would seem that an endocrine agent is at work. This occurs before increased intra-pelvic pressure can be considered a factor. This, Meisen decided, was the result of toxins acting

* A paper delivered at a meeting of the Hippocratic Society, University of Toronto.

on the walls of the veins, which toxins result from the temporarily suspended, or altered, function of the ovaries. It would certainly seem that in these cases there is a deficiency of some hormone, whose duty it is to set up, via the sympathetic nervous system, a proper tone in the muscular coat of the veins.

Kashimura examined sections of varicose-veins removed at operation and found two distinct phases in their pathology. In the first stage he found that the muscular coat of the vein was becoming hyperplastic, and ascribes this to an irritation of the nerves going to the vessels, which in its turn produces a hyperaemic condition of the vasa-vasorum. In the second stage the hyperaemic muscular coat becomes replaced by collagenous connective tissue, as a result of the foregoing irritation. The walls of the vein begin to give way, and mechanical factors continue to carry on the process of degeneration. He, therefore, concludes that the process does not begin by insufficiency of the valves, but is a definite pathological process analogous to that of other organs of the body, such as the heart.

At the moment, the evidence tends to show that the pituitary gland is responsible for this endocrine deficiency. Some suggest that post-pituitary extract be given.

Accept then this lack of muscular tone in the vein walls, induced probably by an endocrine disturbance, and it becomes easier to see why in certain cases, a people walking on its hind legs should become prone to varicose veins. Add to this one of the numerous causes of increased intravenous pressure, and one has a good prima facie case for the production of varicose veins.

The variations of intravenous pressure have been shown by Delbet to be as follows, in the saphenous vein in mid-thigh—sitting position, 16 mm of mercury; standing position, 160 mm; in severe exertion up to 260 mm.

It is generally agreed that incompetence of the valves of the superficial venous system of the leg plays a very definite part in the production of a varicose condition. It has been shown that in varicose conditions with non-functioning valves, the circulation was definitely centrifugal with the leg vertical, and up to an angle of 45 degrees—not toward the heart as in non-varicose veins.

The valves in the communicating veins between superficial and deep systems all open toward the deep veins, and the circulation is found to be definitely from superficial to deep veins. It has been shown by intravenous injections of lipiodol that with the subject lying down the circulation in the varices continues in a centripetal direction, although very slowly, and that blood in the superficial veins does not join the deep system unless another position is assumed or contraction of the leg muscles takes place. Actually it was found that the injected substance tended to remain in the varicosities in this state of rest, for a period of twenty minutes or so.

The abdominal veins normally have no valves. This permits the blood to overflow back down the long saphenous vein, and a vicious circle is set up. Thus veins which are varicose not only fail to perform any useful function, but are actually worse than useless, because in such cases the deep veins have to do double duty. For this reason, the obliteration of the superficial veins actually improves the circulation in the leg.

To repeat: given some endocrine deficiency or constitutional upset causing a weakness or lack of tone in the muscular coat of the veins; add one or other of the many mechanical factors producing a state of increased intravenous pressure, and to these, and probably resulting directly from these, add some valve incompetence, and there follows a definite degenerate process in the walls of the veins, chiefly in the muscular coat, resulting in

the collagenous degeneration observed by Kashimura. The veins lose their resiliency, dilate, and at the same time elongate, finally producing the typical clinical picture of varicose veins.

The structure of the walls of the varicose veins varies. There is the early type in which the wall is so thickened that when cut across it does not collapse, but gapes like an artery. The advanced stage is a very thin tissue-paper wall in which muscle fibres have entirely disappeared, leaving nothing but a certain amount of fibro-cicatrical tissue. The intima may be little affected but the adventitia is usually thickened and is very often adherent to the overlying skin. Another type of vein may be called the hair vein or spider-burst, which consists of dilatations of the finest branches of the superficial veins and which show through the skin like naevi. These are only of cosmetic significance, nevertheless their treatment by injection, although not easy to perform, if correctly done, causes their disappearance without scar formation. Small naevi can also be treated in the same way.

At this point it might be interesting to consider the various solutions used in the injection treatment. The two solutions which have been most widely used are probably sodium morrhuate, and a mixture of quinine and urethane. Some consider the quinine and urethane solution superior. Others favour sodium morrhuate. For instance, Thornhill in England says of quinine and urethane that it is free from the distressing cramps following injection which follows the use of all other solutions; also, it does not cause local necrosis when injected in very small amounts perivenously, which makes it of value in treating hair veins. Then again, Smith, of the Mayo Clinic, writes that sodium morrhuate has marked advantages over other solutions. That there are no cramps and the patient experiences no discomfort during the treatment. The three per cent. solution can be safely used in hair veins without the least fear of necrosis. Another solution which has been used considerably is equal parts of fifty per cent. dextrose and thirty per cent. sodium chloride. This solution is known definitely to produce cramps, which last three to five minutes. Ochsner and Mohorner of New Orleans, experimented with more than twenty different solutions, and report that sodium morrhuate was the most effective of all as a sclerosing solution. It produced complete thrombosis in 71.4 per cent., and endothelial destruction in 75 per cent.

This leads to a consideration of the aim of the treatment. It is not, as is sometimes thought, to clot the blood within the vein. The primary object is to produce a severe chemical damage to the internal lining of an empty vein, in order that a sterile inflammation may be caused, and the two walls of the vein fused together. It follows, of course, that any blood left within the vein must undergo clotting, but the clot is sterile as against that formed in ordinary thrombophlebitis of infectious origin. The infection of the irritant chemical causes the vein to go into spasm which contracts it to small size, the intimal lining is damaged and the two walls are fused together. The sterile thrombus which results is in a contracted, damaged vein, and is, therefore, small and very firmly adherent to the vein wall. It has been shown experimentally, twenty-four hours after injection, that the thrombus was so firmly attached that it needed force, with a knife, to dislodge it. The thrombus is very intimately attached, the intima not being seen. Organization begins as early as the fifth day and continues in the usual way.

These are perhaps the main reasons why emboli from veins so treated are so rare. It has also been shown that the clot itself is of a quite different character to that following an infective process in a vein. It is tough and

decidedly leathery in consistency, solid throughout, and in intimate contact with the inner coat of the vein. The ends of the thrombus do not tail off, but are sharply defined and in many cases are convex in outline. Microscopically it has been shown that a small fibrous network is found extending through all the coats of the vein and into the thrombus itself, tending to anchor it in place.

The findings in respect to the flow of blood in varicose veins also shows how very unlikely it is for an embolus, even if one became detached, to do any great harm, while the subject continues the treatment as an ambulatory one. Out of more than 100,000 injections cited by Thornhill, not a single authentic case of embolism has been recorded.

The only other danger is local necrosis, in the case of very thin veins, where the fluid appears to filter through the vein wall into the surrounding tissue. Experience will tell, though, in which veins this is likely to occur.

Complaints.

The complaints of the patients vary a good deal. Disfigurement is a common complaint in younger people. Some people are afraid of large veins, with good reason, for the vein may burst and bleed dangerously. Others are afraid of chronic ulcers and painful sores. Pain, aching, itching, swollen feet and ankles are other complaints.

Technique.

The technique of injection will be considered briefly, and will be that used in the varicose vein clinic in the T.G.H. While the technique is quite simple and easily carried out, attention must be paid to details, to avoid complications. The patient is seated on a table with the feet resting on a bench below while the operator sits in front. A small glass syringe with a long, fine-bore needle (24 gauge hypodermic), having a short bevel and a sharp point, is used. The needle is introduced bevel down, into the vein. When blood is seen in the tip of the syringe, the vein is stripped above and below by the thumb and forefinger of the left hand, and the contents of the syringe is injected rather quickly. One c.c. of five per cent. sodium morrhuate is injected in each of two places at each sitting. The two places should be about four inches apart, and cut off a segment of the same vein. Immediately on withdrawing the needle the vein is compressed at the site of puncture by means of a small pledget of cotton, held firmly in position with a strip of adhesive for forty-eight hours. The patients are encouraged to continue their ordinary duties. Such injections may be repeated in other affected veins once or twice weekly, and about five sittings are required for the average case.

Course.

Normally the injected veins become small and hard at once and the re-action usually extends for a distance of three to four inches both ways from the point of injection. Usually the area over the vein is reddened and may show a slight brownish discoloration. As a result, a feeling of stiffness and soreness exists, as well as a tender, hard mass which may cause some discomfort for forty-eight hours, which need not interfere with the patient's work. Any tenderness or redness should disappear within a day or so, leaving the small, lumpy, hard veins, which are absorbed and disappear in about six months.

Ill Effects.

Ill effects sometimes occur following injection, and are due to idiosyncrasy or technical error. Local pain may occur at the site of injection; this is a severe stinging sensation and indicates that some of the solution has been injected perivenously. When such occurs, injection should be stopped immediately. Cramps may occur

and are usually in the calf. Strong saline solutions are particularly prone to produce them. They usually disappear in three to five minutes, with no ill effects. Toxic effects may follow the administration of various drugs in individuals who are sensitive to the substance concerned. Thus severe headache, buzzing in the ears, and even uterine contractions have been produced by small doses of quinine, while in others a widespread transient urticaria occurs. Periphlebitis, sloughing and small subcutaneous hemorrhages may occur.

Ulcers.

Varicose veins untreated do not improve but become progressively worse and may be followed by ulceration and cellulitis. The varicose veins result in an impoverished blood supply to the leg skin, so that slight injuries usually result in ulceration. Infection readily sets in, and a real cellulitis may begin, which is a real danger. Many factors contribute to the chronicity of ulcers and these must be corrected, if the ulcers are to be healed and kept so. The cure of ulcer necessitates several stages, which must be faithfully followed through to reach the desired end.

The injection of the veins remaining is essential although it will often not result in cure. The ulcers are dressed with antiseptic dressings until clean. Eusol or hygeol, diluted and applied cold twice daily are good. Ointments result in maceration of tissue, spread of infection and are to be avoided. When the ulcer is clean a circular Unna's paste stocking is applied from the base of the toes to the tuberosity of the tibia. This is put on first thing in the morning when oedema is at a minimum, and is left on for five weeks. The secretion from the ulcerated surface is of actual curative value to the ulcer. It is usually necessary to renew the cast once or twice at intervals of five weeks before healing is complete.

It is remarkable how soon the alleviation of the limb, due to the varicose veins, is noticed by the patient, who will usually signify his satisfaction at about the third or fourth treatment. Likewise the itching which has been felt where any skin irritation, due to the veins, has been present, is quite quickly relieved. An improvement in circulation will result. All varices having been dealt with, the patient is allowed to discard all forms of support.

Complications.

Where the deep veins have been inflamed as in milk leg, injection of the superficial veins should not be carried out as they are necessary for circulation. Acute or subsiding phlebitis is a definite contra-indication. Any acute inflammatory process in the body should be cleared up before injection is done. Cases of chronic nephritis or heart disease with swollen feet, or arthritis and fallen arches with painful feet, will be encountered and are obviously not subjects for injection.

A few don'ts in the injection treatment are here given:

Don't forget the possibility of quinine idiosyncrasy.

Don't forget to inquire for a history of milk leg.

Don't inject a drop of solution unless you are sure the point of the needle is in the lumen of the vein.

Don't inject solutions of quinine during pregnancy or menstruation.

Don't proceed with injection of quinine and urethene if the patient complains of pain.

Don't inject through the base of an ulcer.

Don't forget that in the matter of dosage each vein is a law unto itself, and therefore incline to underdosage if in doubt.

The fact that the injection treatment is ambulatory and that the old operative treatment is not, must be recognized as being the greatest advantage of the injection, for it means

that an enormous number of cases who were quite unable to remain in bed three to four weeks, and for those whose varicose veins and possible ulcers nothing but a palliative measure could be adopted, can now be treated and cured. It will also be seen that the all too prevalent varicose ulcer of the working-class mother will become a thing of the past.

THE SURGICAL TREATMENT OF TUBERCULOUS JOINTS*

By B. J. WOODS, B.Sc., '35.

The treatment of tuberculous joints, as indeed any other treatment, may be discussed under two headings, "local" and "general." However, in this article I intend to deal with four divisions.

1. General Treatment.
2. Local Treatment.
3. Operative Treatment.
4. The treatment of Complications.

GENERAL TREATMENT.

Rest, liberal diet and hygienic surroundings are essential in any form of tuberculous treatment and are carried out preferably in a sanitarium, where outdoor treatment is available.

Heliotherapy is scientific treatment by rays of light, artificial or natural. Dr. Rollier is the high priest of the modern sun-worshippers. His sun-clinic has operated at Leysier in the Swiss Alps since 1903 for the treatment of surgical tuberculosis. He considers his method of treatment of both local and general benefit to the patient. The advantages claimed are that mutilations are avoided, articular function is to be a large extent maintained and the body recovers its harmonious outlines. As a surgical dressing, sunlight possesses the rare qualiy of combining powerful bactericidal action, with a stimulation of tissue repair. Besides favouring the return of articular function, sun treatment tends to result in the softening of hard infiltrations, the absorption of exudates and the expulsion of sequestra and caseous masses. As in any treatment, dosage is important, especially is this so in the initial period of adaptation. The principles are strict individualization and gradual careful progressions.

The results Dr. Rollier gives as follows:

2,167 cases of bone and joint tuberculosis treated from 1915-1923.

1,746, or 80%, healed clinically and radiographically.

242, or 12%, improved.

146, or 6%, stationary.

32, or 2%, worse.

He does not think that the prognosis is less favourable nor the treatment much prolonged in adults as compared to children, nor does he think the results obtained are less lasting than those procured by other measures. He does not consider that age or pulmonary tuberculosis even with haemoptysis are contraindications for heliotherapy. In heliotherapy, success must not be attributed solely to the action of light as open air treatment, rest and nutrition are also important factors in a treatment such as Rollier advocates.

LOCAL TREATMENT.

Comprises all conservative methods of local application which includes measures for reduction of deformity, traction, fixation of joint in desired position, and protection until healing is complete.

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*A paper delivered at a meeting of A.O.A.

Reduction of the deformity is of the utmost importance, since during fixation should ankylosis supervene, it is necessary to have the joint in the position of greatest possible functional utility. A flexed knee, for instance, must be more or less extended and a dropped wrist dorsiflexed. The reduction is commonly effected by gradual traction. The pull at first being in line with the deformity, is modified in direction as the stiffness diminishes till the desired result is secured. Rapid reduction under anaesthetic "Brisement Forcé" is generally discouraged.

Traction has for its object partial fixation of the joint and separation of the contiguous articular surfaces. It is specially indicated in cases with excessive pain and muscle spasm. Counter-extension is frequently necessary, this may be direct, utilizing the weight of the body, or indirect such as lateral traction to prevent the head of the femur from pressing on the rim of the acetabulum. The greatest use of traction is to overcome muscle spasm and to prevent its compressing together diseased and irritated surfaces, causing pain if not increased bony destruction.

Mechanical fixation secured by braces, casts, etc., is important in order to ensure rest for the joint and to eliminate the possibility of ankylosis in a poor functional position.

Protection of the joint is important in the local conservative treatment for obvious reasons.

Injection of Medicaments in and around such joints has been practised, but its effectiveness is very questionable.

OPERATIVE TREATMENT.

In the majority of cases of joint tuberculosis, conservative treatment is the method of choice, but certain conditions definitely indicate operation. The duration of the disease tends to be shortened thereby, but the interference with joint function is more likely to result.

In children the tendency is to be more conservative than in adults, where the disease is generally more acute and painful and where treatment over a period of years is not practical for the wage-earner who is head of a family.

Operative treatment for tuberculous joints may be classified under three headings:

(1) Intra-Articular.
(2) Extra-Articular.
(3) Radical or Amputation Operations.

Intra-Articular Operations.

(1) Arthrotomy and Curetting—consists of opening a joint by a suitable incision and excising or curetting away the diseased tissue. In the case of a small isolated focus this procedure may eradicate the disease.

(2) Operative fixation by bone graft. This may be preceded by removal of articular surfaces of contiguous bones to produce an arthrodesis or may be performed by a bone inlay, peg or other form of graft.

(3) Synovectomy and Arthrectomy. The dissection out of the synovial membrane and articular cartilage. In order to ensure the desired result of ankylosis,, it is advirable to supplement this procedure by an inlay bone graft.

(4) Excision. The removal of all the joint structures together with the contiguous ends of the bones. This operation may be used in very destructive lesions in the adult. It is not attended with favourable results in the child, chiefly because the disease is usually more extensive than shown in the radiograms and therefore the excision of a considerable area of bone is necessary, hence it will often interfere with the growing epiphysis and lead to shortening or irregular growth. This operation is criticized because it causes considerable shortening, and unless a fixation or osteoganic bone graft is applied it may lead to non-union.

With the exception of arthrodesis the underlying principle of all these intra-articular operations is the removal of disease-bearing tissues.

Extra-Articular Operations.

These are a more recent development in the operative treatment of tuberculous joints, whereby a joint is fixed by means of an external splint, without any damage to joint tissues which are the site of the disease. This type of operation is most frequently carried out on the hip or spine.

Amputation Operations.

This radical operative treatment is adopted as a last resort in extreme cases. The probable indications are constitutional disturbances as a result of lardaceous disease, cachexia or the steady advance of the local process; particularly with mixed infection and sinus formation Care must be taken to make the incision well above the diseased area to avoid the inoculation of the flaps with tubercle bacilli.

TREATMENT OF COMPLICATIONS.

Treatment of the Tuberculous Abscess.—It should be recognized that the residual abscess which no longer has any active focus pouring material into it is more amenable to treatment than the abscess which is continually receiving reinforcement from some focus or active lesion.

Jones and Lovett describe three measures of treatment.

(1) Expectancy. — They estimate that 70% of tuberculous abscesses are absorbed if left alone. The absorption is said not to be detrimental to the patient, indeed Rollier claims that the presence of the cold abscess has an immunizing effect upon the patient. A more active therapy is indicated where there is tension on the skin or where pressure is being exerted on vital parts.

(2) Aspiration.—A cure may be effected by repeated emptying of the abscess cavity. A wide bore needle is inserted obliquely through healthy skin and on removal the puncture is sealed over with collodion. In certain cases the thickness of the pus precludes aspiration and incision is then necessary.

(3) Incision—is called for when the skin is discoloured and threatens to give way, or when the abscess is spreading. If a drain is inserted it should not be retained for longer than 24 hours lest a sinus be established.

CORRECTION OF DEFORMITIES.

Deformed positions of joints are primarily due to strong muscular contractions, usually in the direction of more flexion. Later adhesions between the joint surfaces make the deformity more permanent. The treatment of these malpositions resolves itself into conservative methods such as the use of gradual extension secured by traction or wedging in a cast; and operative methods such as division of restraining muscles and tendons and various types of osteotomy.

Operative treatment for tuberculosis of the hip joint.

This form of treatment of tuberculous hip joints has one of two ends in view, either it is directed to the treatment of the primary disease: or to improve the function of the limb that has been the seat of the disease.

PRIMARY OPERATIONS.

An excision of the head of the femur and all infected tissues was practised at one time but the results were generally poor and the practice has been discontinued. In cases where the head of the femur forms a sequestrum it may be removed, but otherwise, surgeons generally do not enter the infected joint. Stiles in 40 cases of excision of the joint had a 25% mortality within six months of the operation.

Merces states that Extra-Articular arthrodesis is inadvisable before the age of 10. After that age he does not recommend it unless there is definite disease of the bone. It is indicated in patients who have frequent painful attacks, with extreme shortening, or a tendency to increasing deformity. Extra-Articular arthrodesis in relation to the hip joint is the building of a bridge between the femur and the os innominatum, generally the ilium.

There are two chief types of this operation. (1) Albee in 1919, described the fusion of the hip joint, using tibial grafts as struts between the crest of the ilium and the greater trochanter. (2) The second used by Hibbs in 1926 is a femoral bone graft swung from the Femoral Trochanter to the ilium without interruption of blood supply. The Hibbs method had the advantage of the strong, wide graft with a short span, its disadvantage is obvious in cases where the bone in the neighbourhood of the greater trochanter is diseased. While intra-articular arthrodesis is probably never successful in producing bony union at the site of active tubercle bacilli, yet extra-articular arthrodesis may be successful in uniting femur and ilium, even while there is some degree of tuberculous activity within the joint

The British surgeons in general are inclined to be more conservative in the treatment of tuberculous hip, but Gridlestone states that while constitutional treatment is essential, operations have been found valuable and often necessary. Constitutional treatment alone leading too often to a recurrence of the local disease. He believes that a tuberculous joint is safe only in two conditions. (1) When it is restored to its former freely movable condition, or (2) When firm bony ankylosis had taken place. In adults a permanently safe and useful limb from conservative treatment alone is a small chance, so that Gridlestone recommends excision followed by extra-articular arthrodesis, done either in a one or two stage operation. In children he does an arthrodesis only in cases who after a period of conservative treatment, show poor clinical or radiological results.

The purpose of arthrodesis is to promote sound healing of a dangerous and relapsing disease, and to prevent deformity. Direct natural bony ankylosis of the hip probably never occurs in the presence of active tubercules, but only several years after the cessation of tuberculous activity; this probably being due to a depression of the osteoblasts by the tubercle bacilli or their products. Even fibrous ankylosis is a late phenomenon in the proximity of active lesions.

Extra-articular arthrodesis provides a convenient and effective internal splint for the joint, and, probably more important than anything else, *rest* for the tuberculous focus. As Gridlestone puts it, "A well-timed, well-devised and well-performed operation is the surgeon's contribution; but arthrodesis is the achievement of the osteoblast."

Abbott and Fisher make use of the fact that extensive destruction of the head of the femur and the acetabulum allow the close approximation of the greater trochanter to the ilium. Such cases lend themselves to direct fusion after wide abduction. Osteotomy is later done and the callus bent sufficiently to allow correction for the abduction deformity.

Wilson in 1927 did an iliofemoraplasty or pedicle flap operation. Though the operation was described as extra-articular the capsule of the joint was opened to expose the neck of the femur, but the joint surfaces were not invaded. Wilson claims that iliofemoroplasty is a suitable operation for any child irrespective of age, but is primarily indicated for children under 12 years, as then the bone flap will bend down more easily. He believes that early fusion of tuberculous joints in children conserves the growing elements of the bone and thereby eliminates or lessens the disability due to shortening. The position he gives for ankylosis of the hip is, flexion of 15 to 20 degrees, not over 10 degrees abduction and no internal or external rotation.

Haar in his study of 50 cases of extra-articular operations in children, draws some valuable conclusions. 20 or 40% of these patients required a second operation. In general the cases requiring second operations were younger, the duration of the disease was shorter, there was less destruction of the head of the femur and aceta-

buhum. He, therefore, concludes that the older the patient, the more quiescent the disease, the greater the destruction, and the less the distance to be bridged, then the greater the possibility of success of an iliac graft. He further states that there seemed no particular advantage of the pedicle iliac graft over the free iliac graft. Haar recommends that where such conditions prevail that a second operation may be anticipated; that an osteoperiosteal graft from the tibia be used in conjunction with the graft from the ilium

Henderson, in a series of 35 cases of all ages compared Intra and Extra-Articular and a combined method of arthrodesis. His findings were that intra-articular methods were not more prone to lead to dissemenation of infection. Post-operative drainage occurred less frequently in cases of combined than in extra-articular operations. His final conclusion was that in his series more uniformly successful results had been obtained by the combined method of intra- and extra-articular types of operation than by any other method.

SECONDARY OPERATIONS.

These are for the purpose of correction of deformity.

(1) In cases of sound bony ankylosis with adduction flexion deformity, transtrochanteric osteotomy is performed and the deformity reduced. By this the excess shortening from adduction is overcome and the strain on the lumbar spine is relieved.

(2) In cases of adduction with imperfect ankylosis, abduction may be permanently restored and shortening lessened by the bifurcating operation of low osteotomy of Lorenz.

(3) In some cases the disease is cured only after the femur has been dislocated. In such cases the head of the femur is transferred to the original acetabulum and an intra-articular arthrodesis is carred out, with the leg abducted and the greater trochanter and its attached muscles moved lower down on the femoral shaft.

ADVICE FROM THE 16TH CENTURY.

Harke, and drawe nere, ye younge students,
Your eares loke ye unclose;
The worthye arte chirurgyrye,
To practise that purpose.

When thou arte callde at anye time,
A patient to see;
And doste perceave the cure to greate,
And ponderous for thee;

See that thou laye disdeyne aside,
And pride of thyne owne skyll
And thinke no shame counsell to take,
But rather wyth good wyll.

Gette one or two of experte men,
To helpe thee in that nede;
And make them partakers wyth thee,
In that worke to procede.

For in so doinge, thine honestye
Thou shalte well kepe and save;
Also thy patiente thereby
Righte greate comforte shall have.

And also if oughte goe a wrye,
Or hinder in thy cure,
The one may mende the others faulte,
While friendship dothe endure.

And furthermore thou haste thy parte,
Both of profyt and fame;
When that your worke hathe good successe
And luckilye dothe frame.

And if it happe to frame amisse
Suspicyon can be none;
Sythe thou haste soughte all means of healthe,
And wouldst not be alone.

But one thinge note, when two or moe
Together joygned be;
Aboute the paynfull patient,
See that ye doe agree.

Wherefore what so ye have to saye,
In thinges aboute your arte;
Let it be done among your selves,
In secrete and a parte.

John Halle, Chyrurgyen,
A.D. 1565.

TRAUMATIC NEUROSES*

By F. H. COTE, '35, B.A., Ph.B., L.

The term traumatic neuroses is applied to functional nervous disorders or disorders wherein there is no demonstrable organic lesion, which appear as the result of an accident or injury and in which there is an actual disturbance in physiological function and a psychological reaction to it.

Some of the slaves probably suffered from them at the building of the pyramids, but the tremendous development of machinery with its consequent increase in the frequency of accidents, the rapid growth of the modern belief in the responsibility of employers, and the increase in the legal duties of common carriers towards their passengers and the general public, have, of late, drawn great attention to these diseases and led to their close study.

We shall not consider the effects of severe direct trauma to the brain, spinal cord and nerves, but only the nervous and mental conditions resulting from accidents, in which, although there may or may not have been injury to some other part of the body, the nervous system has escaped gross trauma.

What usually happens is that following trauma of some sort, let us say to the head, in which there may or may not be unconsciousness, the patients develop a series of major and minor incapacitating signs and symptoms. These may develop immediately, or, what is more usual, there is an incubation period of variable duration in which the individual is well and possibly able to return to work. This period, as will be seen later, is of considerable importance from the viewpoint of differential diagnosis from organic conditions as well as psychologically.

*A paper delivered at a meeting of the A.O.A. Honorary Medical Fraternity.

Traumatic Neurasthenia.

Traumatic neurasthenia is probably the most frequent of all the nervous conditions which follow accidents. Its symptomatology differs in no way from that of neurasthenia from any other exciting cause. A frequent history is about as follows:

The patient has fallen from a car which started as she got off or on, or has been knocked about in a collision. She is dazed for a moment or even made unconscious for a short time.

There are also some bruises and even a broken rib, a cut scalp or a broken arm. She goes or is taken home and finds herself much shaken up, but with no fear of any serious results. The physical injuries heal well, but she finds that there is something wrong with her. She sleeps badly, her appetite is capricious and her digestion poor.

She is downhearted, cries easily and is irritable. She tires very easily and seems to lose interest in everything.

Headache comes on, especially the curious occipital ache which patients often describe as a feeling of unbearable strain rather than as pain. If she is a working-woman her illness often leads to great financial difficulties in the family, and brooding over this and comparing it with former times increases her illness.

If the case is of a kind that leads to a lawsuit, the expectation of appearing in court, the interviews with lawyers, the examination by experts, all add to the illness. Many patients are improved and even cured soon after a verdict, no matter what it may be, not because the patients were malingerers, but because the horror of the trial is over.

Some cases are made more severe by the long delays which occur before

legal settlement is reached, and sometimes among the poor, in cases in which there is no doubt of the genuineness of the symptoms, proper treatment cannot be carried out because of the lack of money.

Some cases which are commonly classified as traumatic neurasthenia ought rather to be designated by the term "general nervousness." The patients suffer from general nervous unrest rather than real weakness. They often describe their condition by saying they "feel in a hurry all over." They fidget and fret and cannot get anything done because they don't know where to begin.

The condition is, of course, not serious, but it is annoying and may last for a long time.

Traumatic Hysteria.

Any one of the possible combinations of hysterical symptoms seen in non-traumatic cases may follow and be caused by trauma. No one combination proves of traumatic origin.

It must be remembered that the presence of hysterical symptoms does not disprove the existence of organic, cerebral or spinal disease. This association of hysteria and organic disease, whether it is a mere coincidence or whether, as is thought by some, a gross lesion may be an exciting cause of hysteria, is seen apart from trauma. Thus often in brain tumour in women especially, in the early stages, hysterical symptoms are so pronounced that the organic disease is entirely overlooked. It is especially important for therapeutic and prognostic reasons, to carefully exclude organic disease before the diagnoses of hysteria is made.

The most frequent type of serious hysteria following an accident is that of palsy with anesthesia, but any type may develop. The palsy may be monoplegic, hemiplegic or paraplegic.

A common history is as follows: After an accident in which the patient has been shocked, the patient finds trouble in walking or using the hands. There is in association, headache, especially over the occiput, backache, points of tenderness along the spine and a general feeling of weakness.

On examination the ordinary signs of organic palsy are missing. The anesthesia may involve one entire side, the palsied one if there is hemiplagia, and stop abruptly at the middle line, or both legs, or be in scattered spots of more or less regular geometrical shape, but having no relation to sensory nerve distributions, or involve the hand or foot alone, having a clear cut boundary anywhere above the wrist or ankle (viz. glove or stocking anesthesia).

Mental Disturbances.

Several types of mental trouble may follow accidents. The most frequently probably is "Mental Dullness." The man or woman who before was mentally quick, alert and accurate is now slow, dull and inaccurate. The clerk who could rapidly add up a column of figures now can scarcely do any arithmetic, not because he can't do it if he tries hard enough, but because he cannot try hard enough for more than a few minutes.

Insanities.

When elderly people have sustained an accident, the claim is often made that it has resulted in senile dementia.

As a rule elderly people do not stand shocks very well and frequently there is permanent loss of mental alertness in consequence of it. There is no doubt that occasionally it is the exciting cause of a true senile dementia. The cerebral arteries although thickened may be healthy enough to nourish the brain under ordinary circumstances and yet may fail under the stress of shock.

Hysterical insane states may be caused by accidents as they may by shock of any kind. States of confusional insanity and dementia praecox also occur.

As to the negative side, true congenital paranoia is never caused by accident. The cases of epileptic insanity

usually follow some direct brain injury, though the convulsions may not occur for a long time after the accident, but there are usually some physical signs of the injury even at the beginning.

Whenever epileptiform, not hysterical, fits follow an accident it is always well to hunt for a local cerebral trauma.

II. How and Why These Traumatic Neuroses Occur.

Neuroses have been seen to develop following trauma in many cases of a most diverse nature, such as railway accidents (Railway Spine), electric currents, sun and heat strokes, violent cosmic disturbances such as earthquakes and cyclones, operations, severe psychic shocks such as great emotions, fears, anxieties, etc.

Given this, what is the relative importance of physical and psychic trauma in determining the symptoms?

Are they in themselves sufficient factors or is there in addition some one, or several other, elements involved?

The answer to this problem involves a short consideration of the various theories held at present as to the production of the psychoneuroses in general and which may roughly be classified into two main schools.

One which adheres to the organic or somatic view; the other, which defends the psychologic or psychopathologic view. Thirdly might be mentioned an intermediate view which considers the problem impossible of definition in either pure somatic or pure psychic terms and attempt to correlate the two.

Organic View

As regards the physical basis view and physical injury it goes without saying that those instances wherein anatomical changes can be established, fall automatically out of the functional group of nervous troubles into that of organic.

Interesting and worthy of note in passing, however, is the fact that nervous manifestations seldom do follow gross injury or trauma. Thus, Dr. Farrar, in a survey he made, states that among the Canadian troops with head injuries, psychoses and neuroses were practically never observed.

He quotes also Bellard-Mignard who, among three hundred and fifty cases of brain injury observed no characteristic mental symptoms. As for wounding elsewhere in the body, the same was true; serious wounds in most cases were not followed by mental illness and often trifling ones were.

The point stressed in the organic theory in the neuroses is that, although no lesions can be demonstrated, yet there are physical and molecular changes which take place in the nervous system as the result of trauma, sufficient to account for every neurosis. Attention is drawn to the fact that in organic disease one frequently observes all kinds of major and minor mental symptoms, just as seen in the neuroses with no demonstrable lesions and by analogy the conclusion is drawn that in these neuroses there must be some structural background

Thus, acording to Oppenheim, violent explosions of large shells, as in the War neuroses, could produce a physical commotion of the nervous system, causing molecular changes in it and gving rise to a functional nervous disturbance in itself.

Psychologic View.

Doubtless the disturbances seen in the neuroses must in some way or other be connected with disturbances in the central nervous system, though we know nothing of what happened to and in the brain to produce them.

But the organic view does not help to explain, why of two individuals, for instance, both exposed to the same injury or shock, one would develop psychoneurotic symptoms and the other not. True, one might say "different individual resistances," but this also does not account for the small number of cases of neuroses compared to the multiplicity of traumatic experiences

that occur nor does it explain the fact that the accidents which are most liable to produce severe results are those in which the accompanying circumstances are horrifying and those which occur suddenly, unexpectedly and without warning.

There must be some predisposing factor within the individual himself, else, everyone would become insane after an accident that would make one insane.

The word "Pithiatism," derived from the Greek words meaning "I persuade" and "curable," is the term which Babinsky, modifying somewhat Bernheim's old theory of suggestion "applied to the system he elaborated in attempting to explain all the neuroses and notably the traumatic hysterias on the basis of the phenomenon of "suggestibility." His definition, in fact, of hysteria is that it is a disease "caused and curable by suggestion."

According to Babinsky, physical injury and moral shocks are in themselves incapable of causing symptoms and as an illustration he adduces the shipwreck experience of a certain individual named Clunet. Briefly, the latter was on board ship the mail steamer LaProvence II., when it was torpedoed and following the shipwreck, he and a number of men were able to swim to a nearby raft, where they remained for some time until they were picked up by a destroyer and brought to Melano to recuperate.

In Clunet's analysis, this incident could be divided into four time periods: In the first, while still on board the torpedoed ship, there was extreme emotional disturbance, but no symptoms. In the second period while on the raft, there was also much emotional and physical suffering from cold. In the third, where rescue was effected, hysterical symptoms began to appear, while in the fourth, while on board ship in the harbour off Melano, recovery and a return to normal life took place.

The point stressed by Babinsky here is that emotion in the sense of a shock must have been maximal and its role, if important, in the genesis of symptoms should have been well exemplified, yet as he remarks, no so-called "pithiatic disorders" appeared and then, those which did, did so after an "incubation period" to which most importance must be attached since it is during it that the factor of suggestibility in the form of auto- or heterosuggestion comes in and determines the picture.

The trauma is but an exciting factor, the real cause is the suggestibility of the individual. Thus a slight pain or injury in a susceptible individual may be the starting point of a complex process of autosuggestion in which all come to play a part, such factors as: the patient's own reflections, beliefs, the misguided solicitude of his friends and not the least also, medical examination with its impressive paraphernalia admirably suited for rousing the patient's attention and directing his thoughts into unexpected channels.

While this view has become extremely popular and doubtless explains many cases, there are some who feel that saying that there are no traumatic neuroses and psychoses as such and that the so-named conditions are the direct and sole result of suggestion, is rather an extreme attitude to take, and while recognizing that a syndrome precipitated by an injury might well be hysterical in nature, they feel that in cases such as the war neuroses for instance, one is dealing with an absolutely different psychological syndrome.

These neuroses were responses to a desire to escape from a frightful injury, responses to threats of life—not purposive flights of combat; nor, as in the hysterias, an "unconscious flight" into disease as a refuge from personal conflicts, but in a word, responses to threats to the ego instincts; ego neuroses.

Briefly, however, post-traumatic neurosis is not believed to occur in people of sound stock and constitution, and the cases of functional shell shock met with, are usually those of a type

of conversion hysteria or anxiety neurosis.

Diagnosis.

One must first establish that he is dealing with a true neurosis, a conclusion not to be arrived at by a process of exclusion alone, and one must remember that a patient with an organic disease might well get up a neurosis and vice versa.

The diagnosis of an accident as a cause of nervous and mental disease is difficult because in so many cases ehe question arises: "Is the patient a Malingerer." The latter, in order to acquire gain, sympathy, etc., will simulate quite well or exaggerate symptoms or diseases. He is, however, sulky, not sincere, overdoes his stunts, resents examination and ceases to play his role when not observed. More art than science is required to detect him.

Important in the diagnosis is to determine the state of health of the claimant just prior to the accident and the nature of the latter. A trifling accident with indications of previous hysterical tendencies in an individual make one doubt that the accident and the hysteria had anything to do with each other.

How long a time may elapse between the accident and the illness and yet the illness be the result of the accident, is hard to say because while many persons who, at first, suffer little, later develop serious troubles, certain diseases, on the other hand, may come on suddenly at the time of accident and yet not be caused by it.

As a rule, however the time is never very long.

Prognosis.

The danger to life in any case is very small. The duration of any case depends on many factors: The age, character of the individual, his desire to get well, his capacity to give up the neurosis for a more difficult adaptation to reality, the type of treatment, skill of the therapist, etc.

While some cases of hysteria are recovered from suddenly, and the cure of neurasthenia is never sudden, the latter disease probably has a higher recovery rate than the former because hysterical patients are very prone to relapse under stress or strain.

In general, in any mental trouble directly resulting from an external cause the patient has a better chance of recovery, other things being equal, than if it had arisen without such external cause.

Treatment.

Broadly speaking, treatment here is the same as in the non-traumatic cases, and any discussion at length is unnecessary.

Symptomatic medication may be of some value and so is treatment by persuasion, suggestion and counter-suggestion which may be embodied in a word, a glance, a gesture, a prescription, faradic brush, hypodermic needle or a pious ritual.

However little the question of litigation or compensation may loom up it should be settled as quickly and equitably as possible. This is the only effective method in the vast majority of cases.

Efforts should be made to have the patient return to work, and where the persistence of symptoms depends on a dread of return to the particular type of work at which the accident occurred, transfer to other work is the only solution.

DIAGNOSIS AND TREATMENT OF FRACTURES OF THE UPPER END OF THE FEMUR

By L. A. STUBENSEY, '34.

The common fractures of the upper end of the femur are three in number, the Subcapital, which is wholly intracapsular, the Transcervical which is partly intracapsular and partly extracapsular, and the Intertrochanteric and fracture through the base of the neck, which are wholly extracapsular. To complete the picture, one may add the fracture of the femoral neck which occasionally occurs in children, and the fracture-separation of the epiphysis of the head of the femur.

Etiology.

The causes of fracture of the neck of the femur may be briefly considered in relation to the age at which the fracture occurs. The subcapital and transcervical types occur usually in persons well past middle life, and most commonly in elderly women. The force which produces the break is directed up the shaft of the femur, and the fracture occurs in the atrophic neck of the femur where the bone is weakest. The fracture usually follows a trifling injury, such as catching the foot on the edge of a carpet, and it is possible that the break is complete before the person strikes the ground.

Fractures through the base of the femoral neck are usually caused by direct falls onto the greater trochanter, and the hip is broken close to the shaft. This fracture is more common in robust, energetic persons either in youth or middle age, and it is due to direct trauma. Fractures of the neck of the femur occasionally occur in children following a fall or a twist of the hip. This fracture is usually of the greenstick variety, and is most likely to be diagnosed as a bruise or sprain if the break is incomplete. Epiphyseal slip occurs most commonly in rapidly growing, overweight boys, especially between the ages of 13 and 16 years. This separation of the epiphysis is due to indirect trauma or some endocrine disturbance producing a weakness in the neck of the femur, the displacement of the head then proceeds under the force of the body weight of the child.

Clinical Features.

In the subcapital and transcervical fractures there is usually some history of trauma, however slight, followed by pain in the hip and inability to use the limb. The limb affected lies in eversion, the outer side of the foot lying flat on the bed. There are few signs, such as swelling or bruising, locally though the hip may appear somewhat flattened. At first there is a little shortening, about ½ inch, which may later increase up to 2 inches, due to muscular spasm. The greater trochanter is raised above its normal level, lies closer to the mid line of the body, and is rotated posteriorly due to the eversion of the limb. There is shortening in the horizontal side of Bryant's Triangle, and Nelaton's Line passes below the tip of the greater trochanter. The iliotibial band of fascia is found to be slack. When one attempts to move the limb severe pain is experienced by the patient, and at this time crepitus may be elicited.

Occasionally these fractures are impacted, in which case the patient may be able to move the limb fairly well and even walk on it without much discomfort. In these cases the fracture will be immobile and crepitus will not be elicited, there will be some shortening and eversion of the limb, however. In rare instances the limb may be inverted, this occurring when the force producing the fracture is directed from

behind, and the fracture is impacted.

Fractures through the trochanters and the base of the femoral neck are usually accompanied by more evident signs of severe local trauma. There is usually severe bruising and swelling of the hip, and considerable pain is suffered by the patient. Loss of power is more marked in these fractures, even though they tend to be impacted more often. There is more marked shortening, sometimes reaching 2½ to 3 inches, and eversion is a common feature. The greater trochanter is raised and rotated posteriorly and its normal relation to Nelaton's Line and Bryant's Triangle is disturbed.

Fracture of the femoral neck in children is only occasionally seen, and when it occurs the child can often walk after the injury. The persistence of pain in the hip brings the child to the doctor for diagnosis. Usually very little is found on examination, beyond about ½ inch shortening and slight eversion of the limb. Unless this fracture is treated adequately, continued bearing of the body weight will cause traumatic coxa vara to develop.

Epiphyseal slip occasionally occurs following a sudden severe injury, but more commonly is only a partial slipping or separation of the epiphysis which is brought to the child's notice only after some minor strain or injury causes the patient to have indefinite pain in the hip or knee, with a gradually increasing limp developing. In fracture-separation of the epiphysis of the femur very few signs may be present, usually on examination one finds that the limb is adducted, slightly flexed and externally rotated. There is a degree of muscular spasm present, movements in internal rotation and abduction are limited. About ½ to 1 inch true shortening occurs, the greater trochanter is slightly elevated and may be rotated outwards. Later all these signs are exaggerated as Coxa Vara develops, and then there is increased adduction and external rotation of the limb.

X-Ray films are the final aids in diagnosis of these fractures, attention being paid more to stereoscopic than flat films. The flat film often gives the appearance of impaction when there is complete separation of the fragments, with the distal fragment lying anterior to the cervical portion of the central portion. X-Ray, therefore, is of use to diagnose the exact site of the fracture, so that treatment can be instituted accordingly. In the rare cases which occur in children X-Ray films may be the only means whereby a greenstick fracture of the neck of the femur can be diagnosed. Then in slipped epiphysis of the femur, X-Ray may be the only means available to differentiate between slipped epiphysis and Legg-Perthe's disease of the head of the femur. Dr. Gallie draws attention to the value of a lateral X-Ray film, which is often very useful in finding the exact position of the fragments, especially after manipulation of the fracture, when one desires accurate knowledge of the position of the fragments in relation to one another.

Treatment.

Treatment of the subcapital or transcervical type of fracture is difficult, because in the age group in which these fractures usually occur serious complications or sequelae may develop which become more serious than the fracture itself. The amount of trauma suffered by the patient may give rise to physical and mental upsets which are serious, entirely apart from the fracture. This fracture is, as a rule, difficult to accurately reduce, and when reduced it is difficult to hold the fragments reduced. It is peculiar to this fracture that the blood supply to the proximal fragment may be so impaired that non-union of the fragments will result, and the proximal fragment may undergo aseptic necrosis. Phemister in the April, 1932, issue of the Canadian Medical Journal, drew attention to the fact that X-Ray films will show this interference with blood supply, two to three months after the fracture, the

dead head will cast a denser shadow than the surrounding living bone, making it possible in this way to recognize the presence of the necrosis. Dr. Galie talking about his work on bone grafts to the hip, stresses this point also. This is an important fact in reference to treatment.

Scudder describes four forms of treatment for these fractures, the best being the forcible abduction method devised by Whitman. The old-time traction and counter-traction method has been greatly used, and is still used by some, but results are usually unsatisfactory, although some claim good results with this means of treatment. Then the Thomas Hip-Splint with or without traction was devised. This method is quite successful in the hands of a few, but requires such expert manipulation and constant attention that it is not recommended for general use. Then the operative pegging of the fragments was advised, but this method is now reserved for those fractures not treated successfully by some other method first.

Whitman's Forcible Abduction and immobilization in plaster with or without traction is the best method for general use. The deformity of shortening and external rotation is overcome by traction and internal rotation. This does not appose the fragments, so Whitman advocated forcibly abduction, which causes tension of the Y-shaped ligament of Bigelow, and acts like a fulcrum forcing the ends of the fracture together.

The choice of anaesthetic is important. One may use Spinal Anaesthesia unless it is contra-indicated, as in extensive arteriosclerosis where one may give ¼ grain Morphia and use Nitrous Oxide and Oxygen for anaesthesia. The patient need not be under the anaesthetic for long, just time enough to break up the fragments and place the limb in the proper position. The application of the plaster is usually painless.

The procedure followed is to abduct the sound limb extremely so as to lock and steady the pelvis, then the injured limb, being carefully supported meanwhile, is abducted forcibly while traction is made on the limb. The eversion deformity is overcome by rotating the leg inwards until the patella points directly upwards. Then the two limbs are maintained in this position while the plaster spica is being put in. A high spica is used extending from under the patient's axillae, to enclose the lower chest and pelvis snugly, and down the thigh and leg to the toes on the affected limb. The sound limb is not encased in plaster unless a low spica is used, when the plaster must be carried down the sound limb to just above the knee.

If the fracture is impacted, as it occasionally is, do not attempt to disimpact, because there is a higher percentage of union in those fractures not disimpacted than in those disimpacted, but length is restored by traction and slight abduction is carried out, the patient is enclosed in plaster as discussed above. Scudder states that the abducted positon, in the impacted fracture, serves to reduce the deformity without altogether separating the fragments and completely breaking down the impaction.

With the patient in this type of fracture it is possible to change the position in bed at will, she may be rolled over on her face and back as often as is required to prevent hypostatic conditions from occurring. Also the patient may shift herself over to the side of the bed, then the leg encased may be swung over the side of the bed, the upper part of the patient swinging erect. Wison and Cochrane advise getting the patient out of bed, and propping pillows behind her, place her in a chair in this way she is enabled to get into a semi-erect position.

The cast is left on for 3 months, at the end of which time it is removed and steroscopic X-Ray films taken. If there is any doubt as to whether bony union has taken place or not, another cast should be put on and left for another three months. After the plaster

is removed entirely the patient should remain in bed another month or so, moving the leg about gradually and becoming used to moving it. Then for a time following this a type of walking caliper should be supplied, so that the body weight is not borne by the injured limb. Dr. Harris believes that normal functional activity should not be attempted for at least 10 to 12 months.

As non-union is very common in this type of fracture one should be careful not to let a patient use a limb where a fracture has not united. If the patient is over 60 years and isn't in very good health, a fibrous union may be sufficient to aiiow her to get about for her remaining years. But if the patient is under 60 years and in good physical condition it is possible for her to get much comfort and relief from invalidism by some type of bone grafting operation, which will give her a useful limb. For this type of fracture Whitman has devised his Reconstruction operation which in most cases is ideal. The hip-joint is exposed from in front, the head of the femur is removed, the greater trochanter is detached from its usual position together with its muscular attachments and is reattached onto the outer surface of the upper end of the femur and fastened there with catgut. The end of the neck of the femur is rounded off to give a false articular surface, and is put into the acetabular fossa. This operation results in some shortening, and flexion of the thigh is reduced 50%, but the patients are no longer cripples, and do not have the degree of pain which a fibrous union causes them to have.

In the younger age groups, in which a transcervical fracture may have occurred and not united, an operation like the Ellis-Jones Method may be done. Here an autogenous bone graft is driven through the greater trochanter into the neck and head of the femur, splinting them together. Union is usually quite good after treatment of these un-united fractures in this way, and the disability encountered very slight.

Intertrochanteric fractures and fractures near the base of the neck of the femur are treated by many methods, and at present there is considerable controversy as to the best method. The Whitman Forcible Abduction method is used by many, and excellent results are claimed. Other surgeons claim that the only similarity in fractures of this type and those discussed above, is the proximity in which they occur. These fractures always unite, the fracture occurring in cancellous bone, and the proximal fragment has an excellent blood supply through Ligamentum Teres, periosteum and vessels in the capsule of the joint. If this fracture is treated by abduction, the fragments are driven together, causing more shortening and greater deformity, so nothing but traction will reduce it, according to Dr. Harris. In order to get this traction, adhesive plaster is applied to the inner and outer sides of the affected leg, starting at about mid thigh, the lower leg and foot may be encased in a plaster cast from the knee down to the toes, with a bar through the heel to prevent rotation. A Thomas Splint may be used to control this rotation, using adhesive in a similar manner, only encasing the limb from the middle of the thigh to just above the malleoli in a flannel bandage to prevent the adhesive from slipping and cutting into the skin. The straps attached to the adhesive are carried around the bars of the splint and over the notch in the end of the splint. From this point traction may be obtained in two ways, either by passing a rope from the traction straps over a pully at the end of he bed to a weight of about 15 pounds. Or the bed may be elevated about 20 to 24 inches at the bottom, and the Thomas splint attached to the end rail of the bed, in this way the patient's weight supplies the traction force. This latter method is used by Dr. Lemesurier in treating fractures of the shaft of the femur by extension. No doubt a combination of these methods for extension could be used. The weights are left on about 3 months, at

the end of this time the hip is examined for union by X-Ray, and after another month in bed the patient is allowed up, but provided with some type of a walking caliper or crutch for about another 6 weeks. The patient should have considerable functional activity by the end of 6 months from the time the fracture occurred.

In the young adult the deformity incident to impaction is overcome by carefully separating and unlocking the impaction, spreading the fragments in a hinge-like fashion. Don't break up the impaction roughly. The fracture is then treated as above.

The fracture of the femoral neck which occurs in children occasionally should be treated adequately. The deformity is completely corrected under anaesthetic and the limb is put in wide abduction with slight inversion. A high plaster spica is then applied as described above. As a rule these fractures heal very well if treated properly, and in 7 to 8 weeks the plaster may be removed and active movements commenced. Weight bearing can be started in about 3 months. If this condition isn't recognized early and treated well, traumatic coxa vara may develop.

In fracture-separation of the epiphysis of the head of the femur the displacement can usually be corrected well enough by manipulative reduction under general anaesthesia. Efforts should be directed toward obtaining full abduction of the hip using the greater trochanter against the ilium as the fulcrum and the lower lip of the acetabulum as the point to fix the epiphysis. At the same time the limb should be forced into internal rotation to correct the backward displacement. Following this reduction the hip should be fixed in full abduction, extension and internal rotation, in a high plaster spica from chest to the toes, the knee is slightly flexed to prevent external rotation. Fixation should be maintained for at least 2 months, and for 6 to 8 months following a walking caliper should be used encouraging active movement of the limb. This treatment is advocated by Wilson and Cochrane.

Wardle of Liverpool recently in the British Journal of Surgery strongly advocated treatment by gradual traction in adduction. He advocates gradual traction as being the most efficient form of treatment and cites cases to prove his belief. Subtrochanteric osteotomy is an excellent second line of defence, but should be reserved for cases seen when the deformity has consolidated itself. No case should be allowed to consolidate itself without a prolonged trial of traction. Wardle condemns open operation.